

CLAIMS

What is claimed is:-

1. An aerofoil incorporating a step along its chord, wherein said step is defined as a substantial difference between the level of the leading edge and the level of the trailing edge of said aerofoil at zero angle of attack;

said step is confined around the aerofoil chord center;

said step length is between one third and two thirds of length of said aerofoil chord;

said step provides compression of the airflow directly beneath said aerofoil (at speed);

said step provides a high pressure airflow area below said aerofoil (at speed);

said step provides a low pressure airflow (area) above said aerofoil at (speed);

said step provides said aerofoil with greater depth than the actual thickness of said aerofoil (perceived thickness);

such depth (said step) provides said aerofoil with greater strength (in all axes) than a conventional aerofoil;

said step is blended into said aerofoil profile (as) neatly (as possible) to create a smooth and aerodynamic airflow over the section.

2. An aerofoil as claimed in claim 1 manufactured as a high aspect ratio aircraft wing incorporating said step;

said step depth is between half of said wing thickness and once said wing thickness at said wing root;

said step tapers, from maximum depth inboard of said wing, to zero depth at the tip of said wing.

3. An aerofoil as claimed in claim 1 manufactured as a low aspect ratio aircraft wing incorporating said step;

said step depth is between once said wing thickness and twice said wing thickness at said wing root;

said step tapers, from maximum depth inboard of said wing, to zero depth at the tip of said wing.

4. An aerofoil as claimed in claim 1 manufactured as a delta aircraft wing incorporating said step;

said step depth is between twice said wing thickness and three times said wing thickness at said wing root;

said step tapers, from maximum depth inboard of said wing, to zero depth at the tip of said wing.

5. An aerofoil as claimed in claim 1 manufactured as a helicopter rotor blade incorporating said step;

said step depth is between half of said blade thickness and twice said blade thickness along the whole length of said blade.

6. An aerofoil as claimed in claim 1 manufactured as an aircraft propeller blade incorporating said step;

said step depth is between half of said blade thickness and twice said blade thickness along the whole length of said blade.

7. An aerofoil as claimed in claim 1 manufactured as a turbofan fan blade incorporating said step;

said step depth is between half said blade thickness and twice said blade thickness at said blade tip;

said step tapers, from maximum depth at the tip of said blade, to zero depth at the root of said blade.

8. An aerofoil as claimed in claim 1 used for any kind of lift or down force, thrust or suction or as an impellor.